



Factors predicting psychiatric co-morbidity in gender-dysphoric adults

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ABSTRACT

Persons with gender identity disorder (GID) often suffer from psychiatric co-morbidity, and it is an important prognostic factor for long-term psychosocial adjustment in GID. However, previous research has not addressed the risk factors of psychiatric co-morbidity. In this study, we tried to clarify the risk factors among individuals with GID in Japan. A total of 326 consecutive GID persons were evaluated independently by two senior psychiatrists at the GID clinic using personal clinical interviews and results of examinations. The prevalence of current psychiatric co-morbidity was 17.8% of the total sample. School refusal was significantly associated with psychiatric co-morbidity. Sexual attraction to neither males nor females among GID persons and sexual attraction to females among male-to-female (MtF) GID persons were also significantly related to psychiatric co-morbidity. This is the first report to demonstrate a close relationship between patterns of sexual orientation and psychiatric co-morbidity among GID persons. We should pay more attention to psychiatric co-morbidity, especially among GID persons with non-homosexual sexual orientations.

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1. Introduction

Gender identity disorder (GID) is characterised by a strong and persistent identification with the opposite sex and discomfort with one's own sex (American Psychiatric Association, 1994). Compared with many other psychiatric disorders, GID is rare (Roberto, 1983; Landen et al., 1996a; Landen et al., 1996b), but in recent years there has been a marked increase in individuals seeking treatment for GID (Johansson et al., 2010; Zucker and Lawrence, 2009). Of course, it remains unclear whether this represents a true increase in prevalence or simply greater comfort in seeking out clinical care (Zucker and Lawrence, 2009).

Children and adolescents with GID are at high risk for developing psychiatric problems (Wallien et al., 2007; de Vries et al., 2011a), and the lifetime psychiatric co-morbidity in GID persons may be high (Hepp et al., 2005). Moreover, psychiatric co-morbidity and mental instability are reported to be important unfavourable prognostic factors for long-term psychosocial adjustment in GID (Bodlund and Kullgren, 1996; Michel et al., 2002). Although several studies, including ours, on psychiatric co-morbidity in a large number of persons with GID have been

reported (Cole et al., 1997; Haraldsen and Dahl, 2000; Hoshiai et al., 2010; de Vries et al., 2011a), there have been no studies in which various risk factors for current psychiatric co-morbidity among GID persons were simultaneously estimated. However, there have been several studies that focussed on sexual attraction and psychological functioning (Smith et al., 2005a; Smith et al., 2005b; De Cuyper et al., 2007; Lawrence, 2010). Homosexual transsexuals functioned better psychologically than non-homosexual transsexuals (Smith et al., 2005b; De Cuyper et al., 2007). After sexual reassignment surgery (SRS), homosexual transsexuals displayed better psychological functioning than their non-homosexual counterparts (Smith et al., 2005a).

In this study, we investigated the relationship between current psychiatric co-morbidity and demographic characteristics of individuals with GID in Japan. Sexual orientation and age of onset are two potential candidates for subtypes of GID in adults (Lawrence, 2010). Therefore, we think these factors should be included as possible risk factors in this study. Other factors might also be of relevance with regard to psychiatric co-morbidity in persons with GID. In the general population, it was found that low educational levels increased the risk of mental disorders in both genders (Chazelle et al., 2011). Further, about one-third of youths treated for school attendance difficulties continued to have serious adjustment problems later in life (Kearney, 2001). Other researchers have found that 30% of youths with school refusal continued to meet criteria for a psychiatric disorder over a 10-year follow-up period (McCune and Hynes, 2005). One of the long-term sequelae of school refusal is an

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increased risk for psychiatric illness (Bernstein et al., 2001; Flakierska-Praquin et al., 1997). Stressful events in a person's youth such as the divorce of his/her parents are also associated with psychiatric illness (Sidebotham and Golding, 2001). Therefore, we hypothesised that sexual orientation, age at onset, low educational achievement, school refusal and parental divorce were risk factors for psychiatric co-morbidity among GID individuals.

Many studies of specific characteristics of the GID population have shown that significant gender differences exist among persons with GID (Okabe et al., 2008; Lawrence, 2010; Paap et al., 2011). Okabe et al. reported that many variables such as age at onset, sexual orientation, presence of a steady partner and experience of marriage were different between male-to-female (MtF) and female-to-male (FtM) transsexuals (Okabe et al., 2008). Paap et al. (2011) found that MtFs reported less severe symptoms of GID than FtMs and that the subcriterion of the GID diagnosis, 'belief of being born the wrong sex', was not equally relevant for both subgroups. Therefore, it seems likely that different risk factors would be relevant for present psychiatric co-morbidity within the respective groups. Therefore, statistical analyses were conducted separately for MtFs and FtMs.

2. Methods

2.1. GID clinic

The GID Clinic at Okayama University Hospital was established in Okayama in 1997. It was the only specialised GID clinic in western Japan that could perform phalloplasty during the study period. Therefore, more FtMs were referred to this GID clinic than MtFs. The GID Clinic has four departments: psychiatry, urology, gynaecology and plastic and reconstructive surgery. Its services include diagnosis, counselling, genetic testing, hormonal therapy, plastic surgery and coordination of social services resources. Many GID individuals come to our clinic to change their official records formally.

2.2. Ethics

This study was approved by the Internal Ethical Committee of Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences. After a complete description of the study to the subjects, written informed consent was obtained before their inclusion in the study.

2.3. Subjects

A total of 603 consecutive Japanese persons consulted the outpatient GID Clinic of Okayama University Hospital between 1 April 1997 and 31 October 2005. All individuals were comprehensively evaluated independently by two senior psychiatrists with a special interest in this area, and 579 of 603 individuals fulfilled the criteria for GID according to the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV) (American Psychiatric Association, 1994).

At the first examination, 326 of 579 GID individuals had not yet started any form of therapy. One hundred and eighty-four persons had started hormonal therapy without genital surgery, and 69 persons had already undergone genital surgery. In this study, to avoid the influence of stage-of-therapy, only persons that had not yet started any form of therapy at the moment they were referred to the clinic were included. In the remaining 326 persons, endocrinology parameters were within normal reference range and no chromosomal abnormalities were found.

The current psychiatric co-morbidity of the 326 GID persons was assessed independently by two senior psychiatrists as

described elsewhere (Hoshiai et al., 2010). Coexisting psychiatric co-morbidity (axis I) was diagnosed in 58 persons, and 268 persons were without psychiatric co-morbidity. This study comprised the same populations as our previous studies, and the detailed clinical characteristics of psychiatric co-morbidity among these GID persons were reported previously (Hoshiai et al., 2010; Okabe et al., 2008).

Of the 326 persons, 217 (66.6%) were the FtM type and 109 (33.4%) were the MtF type. The mean age at first examination was 25.5 ± 6.2 years for the FtM type and 27.8 ± 9.7 years for the MtF type; $t(324) = -2.646$, $p = 0.009$.

2.4. Demographic characteristics

Age at first consultation, age at onset of GID, sexual orientation and level of education were retrieved from the medical chart. The age at onset of GID was defined as the age at which the patient's first well-defined discomfort with his or her sexual identity was perceived. Sexual orientation was divided into four categories, namely, sexually attracted to males, to females, to both males and females and to neither males nor females (hyposexuality). Level of education was divided into three categories, namely graduation from junior high school, high school and university or college.

We additionally examined the prevalence of school refusal and parental divorce (self-reported) before the person reached the age of 18 in this study. School refusal behaviour is defined by the criteria of the Ministry of Education, Culture, Sports, Science and Technology of Japan (MECSST) as refusal by a student to attend school for psychological, emotional, physical or social reasons and absence from school for more than 30 day per year for reasons other than sickness or economic causes (Inoue et al., 2008). In Japan, most reliable data on school-refusal behaviour is collected using the criteria of MECSST. Therefore, in this study, the lifetime presence or absence of school refusal-behaviour was investigated by asking the following question: "Have you ever refused to attend school and been absent from school for more than 30 day per year for reasons other than sickness or economic causes?" We examined the prevalence of parental divorce among GID patients. Only parental divorce before the patient reached the age of 18 was included in this study.

The data on school refusal and parental divorce were based on retrospective self-reporting, and thus may be subject to under-reporting or biased recall. We did not collect information from third-party informants to validate the respondents' reports.

2.5. Statistics (data analysis)

Statistical analysis was conducted using Statistical Package for the Social Sciences (SPSS) 18.0 J (SPSS Inc., Chicago, IL, USA). The difference in the proportion of MtFs and FtMs in age, age at onset of GID, divorce of parent, school refusal, level of education, stage of therapy, sexual orientation and psychiatric co-morbidity were evaluated using the χ^2 test. Group differences in school refusal were compared by the χ^2 test. The significance level was set at $p < 0.05$.

To identify which variables were significantly correlated with psychiatric co-morbidity, we used multiple logistic regression using psychiatric co-morbidity as a dependent variable. Psychiatric co-morbidity was defined as the presence of any axis I disorder. Independent variables were age, age at onset of GID, divorce of parents, school refusal, level of education and sexual orientation. Divorce of parents, school refusal, level of education and sexual orientation were also calculated as categorical variables. Logistic regression analyses were conducted separately for MtFs and FtMs. For sexual orientation, the most numerous group, that is, 'to females' group in FtMs and 'to males' in MtFs are always included in the reference group. The final multiple logistic regression model was obtained after using a stepwise forward-selection method of

the independent variables using the likelihood-ratio test with $p < 0.10$. The strength of the relationship between independent variables and psychiatric co-morbidity was expressed by means of OR with 95% Confidence Interval (CI) and p -value.

3. Results

3.1. Demographic characteristics of GID individuals (table 1)

Demographic characteristics of the individuals are shown in **Table 1**. Age at first consultation, age at onset, level of education, sexual orientation and psychiatric co-morbidity were significantly different between the MtFs and FtMs. Almost all FtMs (194/217, 89.4%) started to feel discomfort with their gender identity before graduation from elementary school. By contrast, about half the MtFs (51/109, 46.8%) started to feel discomfort with their gender identity after graduation from elementary school ($p < 0.001$, $\chi^2 = 71.330$). Among the FtMs, almost all persons (197/217, 90.8%) were sexually attracted to females, whereas among MtFs, 39/109 (35.8%) were attracted to males, 24 (22.0%) to females, 17 (15.6%) to both and 29 (26.6%) to neither males nor females ($p < 0.001$, $\chi^2 = 323.746$).

3.2. Demographic characteristics of individuals with psychiatric co-morbidity

The frequency of current psychiatric co-morbidity was higher among MtFs (24%) than among FtMs (15%) ($p = 0.043$). As shown

in **Table 2**, there were no significant differences in the prevalence rate of psychiatric co-morbidity among groups divided by age, age at onset, divorce of parents and level of education.

Psychiatric co-morbidity occurred significantly more often in GID persons who refused to attend school than in those who did not. GID persons with hyposexuality tend to suffer from psychiatric co-morbidity more often than those without hyposexuality.

Multiple regression analyses for current psychiatric co-morbidity are presented in **Table 3**. Among both MtFs and FtMs, school refusal and hyposexuality were significantly associated with current psychiatric co-morbidity. Only among MtFs, sexual attraction to females showed a significant association to current psychiatric co-morbidity.

4. Discussion

4.1. Psychiatric co-morbidity

First, we compared the results of this study to other studies on psychiatric co-morbidity among GID persons. Haraldsen and Dahl revealed a relatively high co-morbidity rate of axis I disorders (28/86, 33%) among transsexuals who had undergone sex-reassignment surgery (SRS) using a structured clinical interview (Haraldsen and Dahl, 2000), whereas Cole et al. showed a relatively low rate of axis I disorders (23/435, 5%) in persons with gender dysphoria without a structured interview (Cole et al., 1997). In the latter study, a small percentage of patients underwent SRS (hormone treatment, $n = 70$; surgical treatment, $n = 34$).

Table 1
Demographic characteristics of persons with gender identity disorder.

Variables	MtF	FtM	χ^2	P
n	109	217		
Age (years): n (%)				
–24	48 (44)	111 (51)		
25–29	22 (20)	59 (27)		
30–34	14 (13)	25 (12)		
35–	25 (23)	22 (10)		
mean age	27.8 ± 9.7	25.5 ± 6.2		0.009
Age at onset: n (%)				
Before elementary school	25 (23)	139 (65)	71.330	< 0.001
Lower grades of elementary school	14 (13)	33 (15)		
Higher grades of elementary school	19 (17)	22 (10)		
Junior high school	27 (25)	16 (7)		
Senior high school and thereafter	24 (22)	7 (3)		
Divorce of parents: n (%)				
Yes	15 (14)	33 (15)	0.121	0.728
No	94 (86)	184 (85)		
School refusal: n (%)				
Yes	36 (33)	70 (32)	0.020	0.889
No	73 (67)	147 (68)		
Level of education: n (%)				
University or higher	38 (35)	49 (23)	5.617	0.060
High school	59 (54)	141 (65)		
Junior high school	12 (11)	27 (12)		
Sexually attracted to				
To females	24 (22)	197 (90)	160.889	< 0.001
To males	39 (35)	4 (2)		
To both	17 (16)	4 (2)		
To neither	29 (27)	12 (6)		
Psychiatric comorbidity: n (%)				
Yes	26 (24)	32 (15)	4.114	0.043
No	83 (76)	185 (85)		

MtF, male-to-female type; FtM, female-to-male type.

School refusal, school refusal before the age of 18.

Divorce of parents, divorce of parents before the age of 18.

To neither, sexually attracted to neither males nor females.

Table 2

Comparison of GID persons with and without psychiatric comorbidity.

Variables	Psychiatric comorbidity		χ^2	P
	+	-		
n	58	268		
Age (years): n (%)				
-24	26 (45)	133 (50)		
25–29	11 (19)	70 (26)		
30–34	10 (17)	29 (11)		
35–	11 (19)	36 (13)		
mean age	27.4 ± 8.2	26.0 ± 7.4		0.206
Age at onset: n (%)				
Before elementary school	26 (45)	138 (51)	5.972	0.201
Lower grades of elementary school	6 (10)	41 (15)		
Higher grades of elementary school	7 (12)	34 (13)		
Junior high school	9 (16)	34 (13)		
Senior high school and thereafter	10 (17)	21 (8)		
Divorce of parents: n (%)				
Yes	7 (12)	41 (15)	0.396	0.529
No	51 (88)	227 (85)		
School refusal: n (%)				
Yes	32 (55)	74 (28)	16.505	< 0.001
No	26 (45)	194 (72)		
Level of education: n (%)				
University or higher	13 (22)	74 (28)	5.202	0.074
High school	33 (57)	167 (62)		
Junior high school	12 (21)	27 (10)		
Sexually attracted to				
To females	34 (59)	187 (69)	18.879	< 0.001
To males	4 (7)	39 (15)		
To both	3 (5)	18 (7)		
To neither	17 (29)	24 (9)		

GID, gender identity disorder.

School refusal, school refusal before the age of 18.

Divorce of parents, divorce of parents before the age of 18.

To neither, sexually attracted to neither males nor females.

Table 3

Multiple logistic regression analysis of factors affecting psychiatric comorbidity.

Variable	B	SD	Wald	P	OD	95%CI
MtF	School refusal	1.033	0.510	4.108	0.043	2.81 1.04, 7.63
	Sexual attracted	1.364	0.671	4.128	0.042	3.91 1.05, 14.57
	to neither	1.364	0.671	4.128	0.042	3.91 1.05, 14.57
	to female	1.842	0.700	6.919	0.009	6.31 1.60, 24.90
	Constant	-2.582	0.591	19.070	0.000	
FtM	School refusal	1.295	0.424	9.354	0.002	3.65 1.59, 8.38
	Sexual attracted	2.224	0.665	11.185	0.001	9.25 2.51, 34.05
	to neither	-4.280	0.944	20.577	0.000	
	Constant					

SD, standard error; OD, odds ratio; CI, confidence interval of odds ratio.

MtF, male-to-female type

-2 log likelihood = 106.592; Model X2 = 13.173 (p = 0.010).

Prediction equation: $p = 1/[1 + \exp(-1 \times \text{Score})]$

Score = 1.033 × (School refusal) + 1.364 × (to neither) + 1.842 × (to female) - 2.582.

FtM, female-to-male type

-2 log likelihood = 153.203; Model X2 = 28.334 (p < 0.001)

Prediction equation: $p = 1/[1 + \exp(-1 \times \text{Score})]$.

Score = 1.295 × (School refusal) + 2.224 × (to neither) - 4.280

School refusal, Negative=0, Positive=1; Psychiatric comorbidity, Negative=0, Positive=1.

School refusal, school refusal before the age of 18.

Sexual attracted, to neither=1, to female=1.

to neither, sexually attracted to neither males nor females.

In our study, the rate of psychiatric co-morbidity was 18% (58/326). In Japan, the most frequent DSM-III-R disorder among the general population is alcohol-use disorder (4.3%), followed by

mood disorder (1.7%) and anxiety disorder (1.1%) (Kawakami et al., 2004). Compared to the low prevalence rate in the general population, the rate of psychiatric co-morbidity among GID individuals was high.

4.2. Risk factors of psychiatric co-morbidity

In Japan, the rate of school-refusal behaviour according to the MECSST criteria was 1.18% among all elementary and junior high school students, and 1.58% among all high school students in 2008 (Ministry of Education, Culture, Sports, Science, and Technology, 2009). Taking these total prevalence rates into consideration, the prevalence rate of school-refusal behaviour among GID patients (MTF, 27%; FTM, 31%) was very high (Terada et al., 2012). In our study, 30% of GID persons (32/106) with school refusal showed current psychiatric co-morbidity. Multivariate analysis showed that school refusal was significantly related to current psychiatric co-morbidity among both MtFs and FtMs.

In the current study, the Japanese culture might play an important role. Japan is typically described as a collectivistic country. Children who want to act differently from the majority might be under high risk for school refusal. GID persons who experienced school refusal tend to suffer from adult psychiatric co-morbidity. Namely, school refusal predicts future psychiatric co-morbidity.

Of course, another explanation may be that a refusal to attend school is associated with self-vulnerability or psychiatric co-morbidity of GID. Often, school refusal is an outcome of internal self-vulnerability (Kearney, 2001; Nishida et al., 2004). Not attending

school might also be a symptom of anxiety disorder, which co-occurred frequently in gender-dysphoric children (Wallien et al., 2007) and adolescents (de Vries et al., 2011a). For example, the concurrent psychiatric co-morbidity causes school refusal, or GID itself might lead to both school refusal and psychiatric co-morbidity. As a result, GID persons with school refusal might be under a higher risk of future psychiatric co-morbidity or already suffer from psychiatric morbidity.

We clarified a close association of hyposexuality or sexual attraction to females with psychiatric co-morbidity among MtFs. That is, MtFs who are not sexually attracted to males tend to suffer more from psychiatric co-morbidity. Among FtMs, hyposexuality was significantly associated with psychiatric co-morbidity.

As mentioned before, the most widely used typologies for GID in adults employ either sexual orientation or age at onset as bases for categorisation (Lawrence, 2010; Nieder et al., 2011). In a recent review, it was concluded that subtyping by sexual orientation is more promising than by age at onset (Lawrence, 2010). However, there are also studies which do not find sexual orientation to be associated with psychological functioning (de Vries et al., 2011b). In the present study, sexual orientation, rather than age at onset, was significantly associated with psychiatric co-morbidity. The result is in line with previous studies that reported a significant relationship between non-homosexual transsexuals and poor psychological functioning (Smith et al., 2005a; Smith et al., 2005b; De Cuypere et al., 2007; Lawrence, 2010).

Stressful events in youth such as the divorce of one's parents are reported to be associated with psychiatric illness in the general population (Sidebotham and Golding, 2001; Schilling et al., 2007). However, in our study, parental divorce was not associated with current psychiatric co-morbidity among GID persons. The literature on the effects (e.g., psychiatric disorders) of parental divorce on children is extensive, and it is not the divorce itself that seems associated with the problems, but the associated factors such as the negative effects of troubled marriages on children (Kelly, 2000). We determined only the presence or absence of parental divorce and did not examine the troubled marriage. In addition, the relatively low rate of psychiatric co-morbidity might suggest the absence of an association.

4.3. Limitation of this study

Several limitations of this study have to be considered. First, psychiatric co-morbidity was diagnosed according to DSM-IV, but the structured clinical interview for DSM-IV was not used. When clinical interviews are used as measurements of psychiatric co-morbidity, the rates are lower compared to studies where structured interviews are used. This is, we suppose, the most important limitation.

Second, this study is a clinic-based study rather than a field study. Therefore, the sample is large, but not necessarily representative of all GID individuals. As stated above, in this study, 66.6% were FtMs and 33.4% were the MtFs. This proportion is not common in studies on GID. One significant factor affecting the proportion of each diagnosis in this study may be referral bias because in Japan, MtFs can obtain vaginoplasty relatively easily, whereas FtMs can hardly obtain phalloplasty in western Japan outside the GID Clinic of Okayama University Hospital. As a result, general psychiatrists may refer persons with FtMs to our centre. In Japan, another study also reported a similar proportion (104 MtF and 238 FtM) (Baba et al., 2011).

Third, we did not evaluate axis II diagnoses of the subjects. Especially in GID persons, axis II diagnoses would be of interest (Hepp et al., 2005; Hoshiai et al., 2010). In further studies, personality disorders should be assessed using the structured clinical interview.

Fourth, some possible risk factors for current morbidity, such as psychiatric morbidity of parents (Nuttbrock et al., 2010), gender-related abuse (Nuttbrock et al., 2010) and low income and substance misuse (Patel et al., 2006) were not collected.

Fifth, no standardised measures for the chosen variables were used. All information was gathered through clinical interviews or chart study.

5. Conclusions

This is the first report to demonstrate a close relationship between patterns of sexual orientation and psychiatric co-morbidity among GID persons. We should pay more attention to psychiatric co-morbidity, especially among GID persons with non-homosexual sexual orientations.

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